

November 2015 Regional Climate Summary For the San Francisco Bay Area and Monterey Bay Area

November 2015 was a cool month, especially from Thanksgiving onward. Overall, November was slightly cooler than normal and in stark contrast to the previous four months which were all much warmer than normal. The first significant rains of the season occurred in November, with storm systems bringing rain into northern and central California about once a week. November rain totals ran the gamut from well below normal in the North Bay to as much as twice the November average in our southernmost counties.

November Temperatures:

November got off to a warm start with widespread high temperatures in the 70s on the first day of the month. A storm system moving through on the 2nd brought cooler weather. Another storm system that came through a week later ushered in an even cooler airmass and set the stage for the first night of freezing temperatures. Both the Napa and Santa Rosa Airports dropped to freezing during the early morning hours of November 11. Temperatures then remained near normal or slightly below normal through November 18. The region enjoyed four warm days from November 19-22 as a broad ridge of high pressure developed across the west. Three daily high temperature records were set in Oakland and at the Oakland Airport on the 21st and 22nd.

A cold upper low developed near Vancouver Island on November 24 and then dropped southeast into the Great Basin by Wednesday, November 25. This system brought a much colder airmass into the region and set the stage for an extended period of cold weather with overnight lows near freezing or below freezing across much of the region. The first cold morning was Thursday November 26 (Thanksgiving). Cold conditions continued through the Thanksgiving weekend. Below is a listing of the coldest early morning lows for select locations across the region, and the morning on which that temperature occurred.


Coldest Minimum Temperatures from November 26-29, 2015		
Location	Coldest Morning Low	Date
Santa Rosa/Sonoma County Airport	23	11/29
Napa County Airport	23	11/29
King City	25	11/27 and 11/29
Livermore Airport	26	11/29
Morgan Hill	27	11/27
Napa	28	11/29
Gilroy	28	11/27 and 11/29
Concord Airport	29	11/29
Watsonville Airport	29	11/27
Carmel Valley	29	11/27
Concord	30	11/29
Redwood City	30	11/29
Santa Cruz	30	11/29
Hollister	30	11/29
Kentfield	31	11/29
Moffett Federal Airfield	31	11/29
San Jose	31	11/28
Salinas	31	11/27

Half Moon Bay	33	11/28
San Francisco Downtown	42	11/29

Overall, the coldest morning was Monday, November 29, when the majority of locations posted their coldest minimum temperature. Portions of the North Bay Valleys would have experienced subfreezing temperatures on four consecutive nights had it not been for breezy conditions on Thanksgiving night which produced enough mixing to keep temperatures in the 40s on the morning of the 27th.

During this four day cold snap, 11 daily low temperature records were either set or tied across the region:

Record Cold Temperatures since Thanksgiving



Since Thanksgiving morning, 11 daily low temperature records have been either tied or broken across the San Francisco Bay Area and Monterey Bay Area

Date	Location	Record Low	Previous Record and Year
11/26	Monterey	38	39 in 1984
11/26	Oakland Airport	35 (tie)	35 in 2010
11/27	Oakland Museum	40	41 in 2001
11/27	Gilroy	28	29 in 1990
11/27	Monterey	37 (tie)	37 in 1952
11/27	King City	25 (tie)	25 in 1952
11/28	Monterey	38 (tie)	38 in 1990
11/28	Salinas	33 (tie)	33 in 2010
11/29	Napa	28 (tie)	28 in 1975
11/29	Moffett Field	31	32 in 1976
11/29	Gilroy	28 (tie)	28 in 1976

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Social media graphic detailing the list of record minimum temperatures that occurred starting on Thanksgiving and lasting through the following Monday morning (November 26-29).

Average high temperatures for November were close to normal, mostly a bit below normal but slightly warmer than normal at a few climate stations. Average low temperatures for November were universally cooler than normal, anywhere from 1 to 4 degrees below the historical average, mostly due to the cold snap near the end of the month.

November Regional Temperature Summary

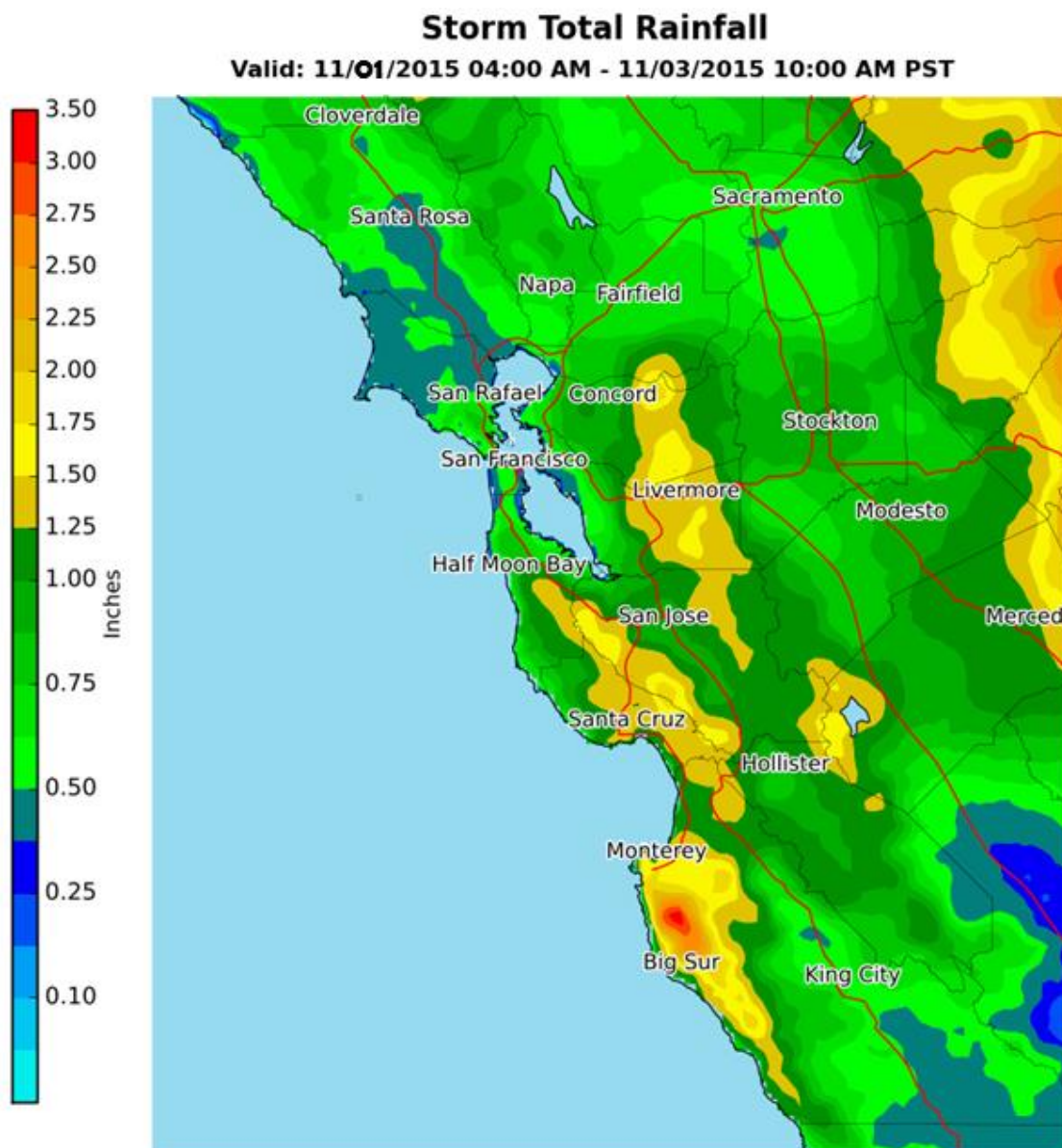
Location	Average High	Normal High	Departure from Normal	Average Low	Normal Low	Departure from Normal
Sonoma County Airport	65.8	64.3	1.5	37.3	40.4	-3.1
Napa Airport	63.9	63.7	0.2	36.2	38.8	-2.6
San Rafael	61.6	62.4	-0.8	41.9	45.9	-4.0
San Francisco Downtown	61.9	63.1	-1.2	49.6	50.1	-0.5
San Francisco Airport	61.7	62.9	-1.2	46.9	48.7	-1.8
Redwood City	63.3	64.5	-1.2	41.5	44.3	-2.8
Concord Airport	64.1	64.1	0.0	41.6	43.9	-2.3
Oakland	65.7	64.6	1.1	47.4	49.1	-1.7
Oakland Airport	62.6	63.1	-0.5	43.1	45.4	-2.3
Livermore Airport	62.8	64.6	-1.8	39.4	42.5	-3.1
Hayward Airport	62.8	63.6	-0.8	44.3	47.4	-3.1
Moffett Federal Airfield	62.8	65.1	-2.3	43.7	47.3	-3.6
San Jose	62.9	64.3	-1.4	42.7	46.0	-3.3
Watsonville Airport	65.6	66.0	-0.4	41.4	43.3	-1.9
Monterey	62.7	62.8	-0.1	45.7	47.1	-1.4
Monterey Airport	62.5	63.7	-1.2	44.5	45.8	-1.3
Salinas Airport	64.9	66.7	-1.8	42.7	44.6	-1.9

Daily Temperature Records for November 2015			
Date	Location	Record Max Temp	Previous Record and Year
11/21	Oakland Museum	74	73 in 2005
11/21	Oakland Airport	73	70 in 1962
11/22	Oakland Museum	72	72 in 2013
Date	Location	Record Min Temp	Previous Record and Year
11/26	Monterey	38	39 in 1984
11/26	Oakland Airport	35	35 in 2010
11/27	Oakland Museum	40	41 in 2001
11/27	Gilroy	28	29 in 1990
11/27	Monterey	37	37 in 1952
11/27	King City	25	25 in 1952
11/28	Monterey	38	38 in 1990
11/28	Salinas	33	33 in 2010
11/29	Napa	28	28 in 1975
11/29	Moffett Federal Airfield	31	32 in 1976
11/29	Gilroy	28	28 in 1976

November Precipitation:

The first precipitation event in November began late on Sunday, November 1. Light rain started in the North Bay that evening as a frontal system moved in from the northwest. Rain reached San Francisco just prior to midnight. Rain rates increased during the early morning hours of Monday, November 2 as the front moved south of San Francisco. Most rainfall with this system occurred early on November 2nd, but showers continued into the afternoon, along with isolated thunderstorms in Napa County. Small hail was reported in Napa that afternoon.

Because the November 2nd system strengthened as it moved south, rainfall totals were highest south of the Golden Gate, with the highest amounts in the Santa Cruz Mountains, East Bay Hills, and Santa Lucia Mountains of Monterey County.



Graphic depicting rainfall totals with the November 1-2 precipitation event.

One week later, on November 8 and 9, another storm system moved in from the northwest. Light rain began across the North Bay during the late morning hours of Sunday the 8th, and reached San Mateo County and the East Bay by early afternoon. Similar to the system of a week earlier, this one strengthened further south over Monterey and San Benito Counties early that evening. Active weather continued through the day on Monday November 9 as a cold and unstable airmass spread across the region. Some weather highlights from the 9th include:

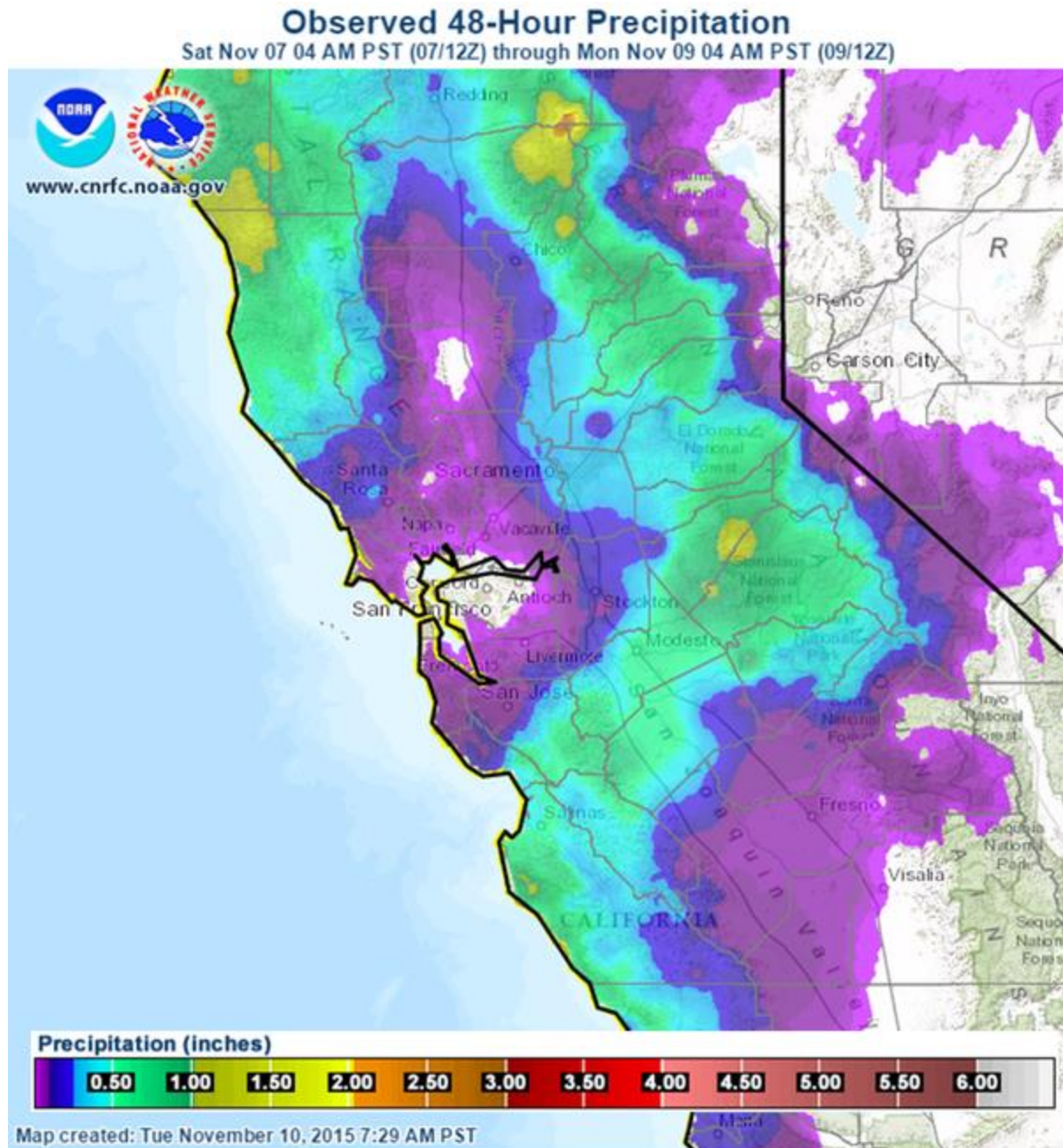
- 7:00 am: Showers and thunderstorms move into the North Bay
- 7:45 am: Small hail reported in San Rafael
- 8:30 am: Thunderstorms along the San Mateo County Coast
- 9:20 am: Intense showers and thunderstorms moving through Santa Cruz.
- 11:00 am: Pea-sized hail and heavy shower in Carmel
- 11:30 am: Brief heavy rain northeast of Boulder Creek: 0.25" in only 5 minutes
- 12:55 pm: Small hail in Capitola
- Morning: Lightning strikes a tree Golden Gate National Cemetery in San Bruno.
- Morning: Lightning strikes the Golden Gate Bridge.



Lightning strikes a tower of the Golden Gate Bridge on November 9. Photo: Charles Hall



Lightning damage to a tree in Golden Gate National Cemetery in San Bruno on November 9. Photo: Matt Kiolbassa



Graphic depicting rain totals for November 8 and 9, 2016. Note how the greatest rain totals were south of San Jose.

Rain events in November continued to come about a week apart. The next weather system began to spread rain into the North Bay shortly after midnight on Sunday, November 15. By 4 am that morning a band of heavy rain associated with a cold front pushed onshore along the San Mateo County coast, and then reached Monterey by 4:40 am. Although rainfall was heavy for a time, rainfall duration was relatively short with this system. Thus, rain totals across the region were mostly about a half inch or less. A few locations, mostly in the hills, picked up between a half inch and an inch.

Locally strong and gusty southerly winds developed ahead of the cold front on the 15th, but northwest winds behind the front remained strong and gusty from late Sunday afternoon through Sunday Night.



A large pine tree is cleared from the entrance roadway into Jacks Peak Park in Monterey on November 16. Strong winds on the night of Sunday, November 15 brought the tree down. Photo: Duane Dykema

The next precipitation event occurred just prior to the Thanksgiving cold spell. A cold front swept through the area during the morning of Tuesday, November 24, producing mostly light amounts of rain. Rain totals were generally under a half inch except near Santa Cruz where amounts were near 0.75". Isolated showers continued through that night. Ice pellets were reported in San Francisco at midnight and small hail fell in Mountain View during the early morning hours of Wednesday, November 25.

The final precipitation event in November occurred on the final day of the month, just after the Thanksgiving cold event was drawing to a close. During the early morning hours of Monday, November 30, light rain began to spread into the North Bay while temperatures were still close to freezing. At 10 am there was a mix of rain and snow (with the temperature at 35 degrees) in the Sonoma County town of Rohnert Park. Precipitation on November 30 was isolated and very light. Just a few locations received more than a trace amount.

For the month as a whole, rain totals (as a percent of average) varied considerably across the region. The North Bay did not fare very well, with precipitation totals that were only 20 to 40% of normal in most locations. Only Napa and Petaluma managed to accumulate at least half of their

November average. November precipitation totals were higher farther to the south. Several locations in the East and South Bay picked up more than 100 percent of their average November rainfall. Totals were better still from Monterey Bay south where most locations accumulated above normal rainfall and a few locations (Monterey Airport, Salinas, and Hollister) picked up around twice their normal November rainfall.

November Regional Precipitation Summary

Location	November Rainfall	Normal Nov Rain	Percent of Normal
North Bay			
Angwin	1.81	5.16	35
Calistoga	1.81	4.75	38
Cloverdale	1.97	5.54	36
Kentfield	1.42	6.46	22
Muir Woods	1.90	5.07	37
Napa	1.82	3.45	53
Napa Airport	1.21	2.56	47
Occidental	1.53	7.34	21
Petaluma Airport	1.96	3.29	60
Saint Helena	1.47	4.49	33
San Rafael	0.87	4.31	20
Sonoma County Airport	1.48	4.69	32
Sonoma	1.28	3.86	33
San Francisco Peninsula	November Rainfall	Normal Nov Rain	Percent of Normal
Half Moon Bay	1.70	3.32	51
Palo Alto	0.98	1.96	50
Redwood City	2.04	2.37	86
San Francisco Airport	1.42	2.38	60
San Francisco Downtown	1.43	3.16	45
East Bay			
Antioch	1.51	1.60	94
Berkeley	1.82	3.30	55
Concord	1.48	2.22	67
Concord Airport	1.53	1.54	99
Fremont	2.35	1.85	127
Hayward Airport	1.63	2.17	75
Livermore	2.49	1.84	135
Livermore Airport	2.43	1.98	123
Martinez	1.60	2.59	62
Mount Diablo Junction	2.20	3.11	71
Newark	2.12	1.70	125
Oakland	0.96	2.89	33
Oakland Airport	1.11	2.45	45
Richmond	1.59	3.24	49

South Bay and Santa Cruz County	November Rainfall	Normal Nov Rain	Percent of Normal
Ben Lomond	2.87	6.09	47
Gilroy	1.72	2.28	75
Moffett Federal Airfield	2.42	1.64	148
San Jose	2.42	1.68	144
Santa Cruz	4.42	3.75	118
Watsonville	3.43	2.74	125
Watsonville Airport	3.10	2.10	148
Monterey and San Benito Counties			
Big Sur Station	4.11	4.83	85
Carmel Valley	3.41	2.35	145
Hollister	3.43	1.68	204
King City	1.62	1.11	146
Monterey	3.51	2.32	151
Monterey Airport	3.92	1.88	209
Pinnacles National Park	2.73	1.54	177
Salinas	3.40	1.76	193
Salinas Airport	2.74	1.40	196

Monthly Ranks for Downtown San Francisco		
Average High Temperature	61.9 degrees	51 st coolest out of 142 years
Average Low Temperature	49.6 degrees	28 th coolest out of 142 years
Average Temperature	55.8 degrees	37 th coolest out of 142 years
Precipitation	1.43 inches	64 th driest out of 166 years

Monthly Extremes for Select Locations			
Location	Max Temp: Warmest Day(s)	Min Temp: Coolest Day(s)	Precipitation: Wettest Day(s)
Sonoma County Airport	11/20	11/29	11/09
	78 degrees	23 degrees	0.49 inches
San Francisco	11/20	11/29	11/02
	70 degrees	42 degrees	0.48 inches
Livermore Airport	11/01	11/29	11/02
	77 degrees	26 degrees	1.48 inches
San Jose	11/01	11/28	11/02
	73 degrees	31 degrees	1.13 inches
Salinas Airport	11/21	11/27	11/02
	78 degrees	33 degrees	1.22 inches

Note: Climatological data included in this document is preliminary. For official certified climatological data please contact the National Climatic Data Center at 828-271-4800 or <http://www.ncdc.noaa.gov>. Official values as determined at the above web site may take several months for authentication and publication.